

SOLICITATION, OFFER AND AWARD		1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)		RATING DO-C9	PAGE OF 1 23 PAGES
2. CONTRACT NO.	3. SOLICITATION NO. N00173-01-R-SE04	4. TYPE OF SOLICITATION <input type="checkbox"/> SEALED BID (IFB) <input checked="" type="checkbox"/> NEGOTIATED (RFP)		5. DATE ISSUED 11 JUN 2001	6. REQUISITION/PURCHASE NO. 73-0783-01
7. ISSUED BY DEPARTMENT OF THE NAVY Naval Research Laboratory-SSC Code 3235, Attn: EJS Stennis Space Center, MS 39529-5004		8. ADDRESS OFFER TO (If other than Item 7) CODE N68462			

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

SOLICITATION

9. Sealed offers in original and 3 copies for furnishing the supplies or services in the Schedule will be received at the place specified in Item 8, or if handcarried, in the depository located in Bldg 1100, Stennis Space Center, MS 39529 until 15:30 local time 16 JUL 2001
(Hour) (Date)

CAUTION - LATE Submissions, Modifications, and Withdrawals: See Section L, Provision No. 52.214-7 or 52.215-10. All offers are subject to all terms and conditions contained in this solicitation.

10. FOR INFORMATION CALL:	A. NAME Eric J. Sogard	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) 228-688-5980
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OFFER (Must be fully completed by offeror)

NOTE: Item 12 does not apply if the solicitation includes the provisions at 52.214-16, Minimum Bid Acceptance Period.

12. In compliance with the above, the undersigned agrees, if this offer is accepted within _____ calendar days (60 calendar days unless a different period is inserted by the offeror) from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT (See Section I, Clause No. 52-232-8)	10 CALENDAR DAYS	20 CALENDAR DAYS	30 CALENDAR DAYS	CALENDAR DAYS
	%	%	%	%
14. ACKNOWLEDGMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated: _____)	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

15A. NAME AND ADDRESS OF OFFEROR	CODE	FACILITY	16. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (Type or print)
15B. TELEPHONE NO. (Include area code)	15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE - ENTER SUCH ADDRESS IN SCHEDULE.		17. SIGNATURE
18. OFFER DATE			

AWARD (To be completed by Government)

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION
22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: <input type="checkbox"/> 10 U.S.C. 2304(c) () <input type="checkbox"/> 41 U.S.C. 253(c) ()		23. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified) ITEM
24. ADMINISTERED BY (If other than Item 7) CODE		25. PAYMENT WILL BE MADE BY CODE
26. NAME OF CONTRACTING OFFICER (Type or print)		27. UNITED STATES OF AMERICA (Signature of Contracting Officer)
		28. AWARD DATE

IMPORTANT - Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice.

PART I - THE SCHEDULE
SECTION B
SUPPLIES OR SERVICES AND PRICES/COSTS

B-1 SUPPLIES/SERVICES AND COSTS

ITEM NUMBER	SUPPLIES/SERVICES	ESTIMATED COST	FIXED FEE	ESTIMATED COST PLUS FIXED FEE
0001	The Contractor shall provide all personnel, facilities, materials and services necessary to perform the tasks, in accordance with Attachment (1) Statement of Work and all attachments	\$	\$	\$
0002	Data in accordance with Exhibit A (DD 1423)	* NSP	* NSP	* NSP
TOTAL ESTIMATED COST PLUS FIXED FEE			\$	\$

* *Not Separately Priced*

SECTION C
DESCRIPTION/SPECIFICATIONS/STATEMENT OF WORK

C-1 STATEMENT OF WORK

The work and services to be performed hereunder shall be subject to the requirements and standards contained in Attachment (1), Statement of Work, with Exhibit A, Contract Data Requirements List, and all other Attachments cited in Section J, which are incorporated by reference into Section C.

C-2 REQUIREMENTS FOR ON-SITE CONTRACTORS

For those portions of the work under this contract performed at any NRL site, the contractor shall comply with the Requirements for On-Site Contractors dated 8 December 2000, which are hereby incorporated by reference. The full text is available at <http://heron.nrl.navy.mil/contracts/home.htm>.

SECTION D
PACKAGING AND MARKING

D-1 PACKAGING AND MARKING

Preservation, packaging, packing and marking of all deliverable contract line items must conform to normal commercial packing standards to assure safe delivery at destination.

**SECTION E
INSPECTION AND ACCEPTANCE**

E-1 INSPECTION AND ACCEPTANCE CLAUSES INCORPORATED BY REFERENCE

FAR CLAUSE TITLE

52.246-5 - Inspection Of Services - Cost Reimbursement (APR 1984)

DFARS CLAUSE TITLE

252.246-7000 - Material Inspection And Receiving Report (DEC 1991)

E-2 INSPECTION AND ACCEPTANCE

Inspection and acceptance of the final delivery will be accomplished by the Technical Manager (TM) or Contracting Officer Representative (COR) designated in Section G of this contract. Inspection and acceptance will be performed at the Naval Research Laboratory, Washington DC 20375-5320.

**SECTION F
DELIVERIES OR PERFORMANCE**

F-1 DELIVERIES OR PERFORMANCE CLAUSES INCORPORATED BY REFERENCE:

FAR CLAUSE TITLE

52.242-15 - Stop-Work Order (AUG 1989) - Alternate I (APR 1984)

52.247-34 - F.O.B. Destination (NOV 1991)

F-2 PERIOD AND PLACE OF PERFORMANCE

(a) The work under this contract shall commence on date of award and be completed no later than October 1, 2004.

(b) The principal place of performance of this contract shall be the Contractor's facility.

SECTION G
CONTRACT ADMINISTRATION DATA

G-1 PROCURING OFFICE REPRESENTATIVE

In order to expedite administration of the contract, the Administrative Contracting Officer (ACO) will direct inquiries to the appropriate office listed below. Please do not direct routine inquiries to the person listed in Item 20A on Standard Form 26.

Contract Matters- *

Security Matters- *

Safety Matters- *

Patent Matters- *

Release of Data- *

The ACO will forward invention disclosures and reports directly to the Associate Counsel for Patents, Code 1008.2, Naval Research Laboratory, Washington DC 20375-5320. The Associate Counsel for Patents will return the reports along with a recommendation to the Administrative Contracting Officer. The Associate Counsel for Patents will represent the Contracting Officer with regard to invention reporting matters arising under this contract.

*(* To be completed at time of award)*

G-2 CONTRACTING OFFICER'S REPRESENTATIVE (COR) - FUNCTIONS AND LIMITATIONS

* is hereby designated the cognizant COR who will represent the Contracting Officer in the administration of technical details within the scope of this contract and inspection and acceptance. The COR is not otherwise authorized to make any representations or commitments of any kind on behalf of the Contracting Officer or the Government. The COR does not have the authority to alter the Contractor's obligations or change the specifications in the contract. If, as a result of technical discussions, it is desirable to alter contract obligations or statements of work, a modification must be issued in writing and signed by the Contracting Officer. The COR is responsible for reviewing the bills and charges submitted by the Contractor and informing the ACO of areas where exceptions are to be taken.

*(* To be completed at time of award)*

G-3 ONR 5252.242-9718 - TECHNICAL DIRECTION (DEC 88)

(a) Performance of the work hereunder is subject to the technical direction of the Scientific Officer/COR designated in this contract or his duly authorized representative. For the purposes of this clause, technical direction includes the following:

- (1) Direction to the Contractor which shifts work emphasis between work areas or tasks, requires pursuit of certain lines of inquiry, fills in details or otherwise serves to accomplish the objectives described in the statement of work;
- (2) Guidelines to the Contractor which assist in the interpretation of drawings, specifications or technical portions of work description.

(b) Technical direction must be within the general scope of work stated in the contract. Technical instructions may not be used to:

- (1) Assign additional work under the contract
- (2) Direct a change as defined in the contract clause entitled "Changes";
- (3) Increase or decrease the estimated contract cost, the fixed fee, or the time required for contract performance; or
- (4) Change any of the terms, conditions or specifications of the contract.

(c) The only individual authorized to in any way amend or modify any of the terms of this contract shall be the Contracting Officer. When, in the opinion of the Contractor, any technical instruction calls for effort outside the scope of the contract or inconsistent with this special provision, the Contractor shall notify the Contracting Officer in writing within ten working days after its receipt. The Contractor shall not proceed with the work affected by the technical direction until the Contractor is notified by the Contracting Officer that the technical direction is within the scope of the contract.

(d) Nothing in the foregoing paragraphs may be construed to excuse the Contractor from performing that portion of work statement which is not affected by the disputed technical instruction.

G-4 CONTRACTOR-ACQUIRED PROPERTY

(a) The contractor is authorized to acquire the following items of facilities which are needed to accomplish this contract.

Items to be Acquired

Estimated Cost

*

*(*this provision will be included and completed at time of award, if applicable)*

(b) This authorization does not constitute any consent required pursuant to the contract clause entitled "Subcontracts" (FAR 52.244-2). Advance notification or requests for consent pursuant to that clause shall be directed to the administrative contracting officer (ACO).

(c) Pursuant to the contract clause entitled "Government Property (Cost-Reimbursement, Time-and-Material, or Labor-Hour Contracts)" (FAR 52.245-5), title to the property shall vest in the Government.

(d) Prior to acquisition of any item of Industrial Plant Equipment, the Contractor must comply with the requirements of Department of Defense Federal Acquisition Regulation Supplement (DFARS 245.302-1(b)(1)(A). (See DFARS 245.301 for definition of "Industrial Plant Equipment.")

G-5 SUBCONTRACTORS/CONSULTANTS

(a) Advance notification or requests for consent pursuant to the contract clause entitled "Subcontracts" (FAR 52.244-2) shall be directed to the cognizant administrative contracting officer (ACO).

(b) The following subcontractors/consultants have been identified in the Contractor's proposal as necessary for performance of this contract:

Subcontractor/Consultant Name

Estimated Cost

(Paragraph (b) will be included and filled in at time of award if subcontractor/consultants are proposed by the successful offeror)

G-6 NAPS 5252.232-9001 - SUBMISSION OF INVOICES (COST-REIMBURSEMENT, TIME-AND-MATERIALS, LABOR-HOUR, OR FIXED PRICE INCENTIVE (JUL 1992)

(a) "Invoice" as used in this clause includes contractor requests for interim payments using public vouchers (SF 1034) but does not include contractor requests for progress payments under fixed price incentive contracts.

(b) The Contractor shall submit invoices and any necessary supporting documentation, in an original and 4 copies, to the contract auditor at the following address:

(To be completed at time of award)

unless delivery orders are applicable, in which case invoices will be segregated by individual order and submitted to the address specified in the order. In addition, an information copy shall be submitted to [See Section G for designated COR]. Following verification, the contract auditor will forward the invoice to the designated payment office for payment in the amount determined to be owing, in accordance with the applicable payment (and fee) clause(s) of this contract.

(c) Invoices requesting interim payments shall be submitted no more than once every two weeks, unless another time period is specified in the Payments clause of this contract. For indefinite delivery type contracts, interim payment invoices shall be submitted no more than once every two weeks for each delivery orders. There shall be a lapse of no more than 30 calendar days between performance and submission of an interim payment invoice.

(d) In addition to the information identified in the Prompt Payment clause herein, each invoice shall contain the following information, as applicable:

- (1) Contract line item number (CLIN)
- (2) Subline item number (SLIN)
- (3) Accounting Classification Reference Number(ACRN)
- (4) Payment terms
- (5) Procuring activity
- (6) Date supplies provided or services performed
- (7) Costs incurred and allowable under the contract
- (8) Vessel (e.g., ship, submarine or other craft) or system for which supply/service is provided

(e) A DD Form 250, "Material Inspection and Receiving Report",

- ☐ is required with each invoice submittal.
- ☒ is required only with the final invoice.
- ☐ is not required.

(f) A Certificate of Performance

- ☐ shall be provided with each invoice submittal.
- ☒ is not required.

- (g) The Contractor's final invoice shall be identified as such, and shall list all other invoices (if any) previously tendered under this contract.
- (h) Cost of performance shall be segregated, accumulated and invoiced to the appropriate ACRN categories to the extent possible. When such segregation of costs by ACRN is not possible for invoices submitted with CLIN/SLINS with more than one ACRN, an allocation ratio shall be established in the same ratio as the obligations cited in the accounting data so that costs are allocated on a proportional basis.

G-7 PAYMENT OF FIXED FEE (COMPLETION FORM)

The fixed fee set forth in Section B of this contract shall be payable on completion of the work and services required under each CLIN of this contract and their acceptance on behalf of the Government. However, the contractor may bill on each voucher the amount of the fixed fee bearing the same percentage to the amount of cost billed as the total fixed fee bears to the total estimated cost set forth in Section B, subject to the contract clause entitled "Fixed Fee" (FAR 52.216-8). If the fixed fee is reduced pursuant to any clause or requirement of this contract and the reduced fee is less than the sum of all fee payments made to the contractor under this contract, the contractor shall repay the difference to the Government. The total fee paid the contractor shall not exceed the fixed fee set forth in Section B.

G-8 INCREMENTAL FUNDING

Pursuant to the Limitation of Funds clause (FAR 52.232-22), the total amount allotted to this contract is \$* and it is estimated that this amount is sufficient for contract performance through *.

*(*this provision will be included and completed at time of award, if applicable)*

G-9 PAYMENT INSTRUCTIONS FOR MULTIPLE ACCOUNTING CLASSIFICATION CITATIONS (COST-REIMBURSEMENT)

The purpose of these instructions is to permit the paying office to charge the accounting classification citations in the contract in a manner that reflects the performance of the contract. These instructions do not create any obligation on the part of the Government or the contractor nor do they in any way alter any obligation created by any other provision of the contract. Invoices should be paid from available ACRNs in the following order:

- (a) ACRNs cited on the contractor's invoice.
- (b) On a proportional basis from any ACRNs assigned to funds which will cancel at the end of the current fiscal year.
- (c) The ACRN assigned to the following line of accounting:
97X4930.NH4A 000 77777 0 000173 2F 000000 N00173Z45000.
- (d) If funds appropriated in more than one fiscal year are allotted to the contract, the ACRN assigned to the oldest allotment of funds.
- (e) On a proportional basis from all ACRNs assigned to allotments of funds appropriated in a single fiscal year.

SECTION H SPECIAL CONTRACT REQUIREMENTS

H-1 TYPE OF CONTRACT

This is a *

*(*To be completed at time of award)*

H-2 ONR 5252.237-9705 - KEY PERSONNEL (DEC 88)

(a) The Contractor agrees to assign to the contract tasks those persons whose resumes were submitted with its proposal and who are necessary to fulfill the requirements of the contract as "key personnel". No substitutions may be made except in accordance with this clause.

(b) The Contractor understands that during the first ninety (90) days of the contract performance period, no personnel substitutions will be permitted unless these substitutions are unavoidable because of the incumbent's sudden illness, death or termination of employment. In any of these events, the Contractor shall promptly notify the Contracting Officer and provide the information described in paragraph (c) below. After the initial ninety (90) day period the Contractor must submit to the Contracting Officer all proposed substitutions, in writing, at least fifteen (15) days in advance (thirty (30) days if security clearance must be obtained) of any proposed substitution and provide the information required by paragraph (c) below.

(c) Any request for substitution must include a detailed explanation of the circumstances necessitating the proposed substitution, a resume for the proposed substitute, and any other information requested by the Contracting Officer. Any proposed substitute must have qualifications equal to or superior to the qualifications of the incumbent. The Contracting Officer or his/her authorized representative will evaluate such requests and promptly notify the Contractor of his/her approval or disapproval thereof.

(d) In the event that any of the identified key personnel cease to perform under the contract and the substitute is disapproved, the contract may be immediately terminated in accordance with the Termination clause of the contract.

The following are identified as key personnel: *

*(*To be completed at time of award)*

H-3 ONR 5252.235-9714 - REPORT PREPARATION (FEB 97)

Scientific or technical reports prepared by the Contractor and deliverable under the terms of this contract will be prepared in accordance with format requirements contained in ANSI/NISO Z39.18-1995, "Scientific and Technical Reports: Elements, Organization, and Design. "[NOTE: ANSI Z39.18 may be obtained from NISO Press Fulfillment Center, P. O. Box 338, Oxon Hill, MD. 20750-0338. Telephone 1-800-282-6476]

H-4 ON-SITE USE OF GOVERNMENT PROPERTY

It is anticipated that Government property will be used by the contractor's personnel in the performance of that portion of the contract performed on-site at the U.S. Naval Research Laboratory (NRL) including any of its field sites. Such use will be on a rent free basis and all such property shall be considered to remain in the possession and control of the NRL for property responsibility and accountability purposes.

H-5 REPRESENTATIONS AND CERTIFICATIONS

The Contractor's completed Representations, Certifications, and Other Statements of Offerors or Respondents is incorporated herein by reference in any resultant award.

H-6 ELECTRONIC AND INFORMATION TECHNOLOGY (EIT)

In accordance with Section 508 of the Rehabilitation Act of 1973 (29 U.S.C. 794d), all EIT supplies and services provided under this contract must comply with the applicable accessibility standards issued by the Architectural and Transportation Barriers Compliance Board at 36 CFR part 1194 (see FAR Subpart 39.2). Electronic and information technology (EIT) is defined at FAR 2.101.

PART II - CONTRACT CLAUSES
SECTION I
CONTRACT CLAUSES

I-1 52.252-2 - CLAUSES INCORPORATED BY REFERENCE (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available.

Also, the full text of a clause may be accessed electronically at this/these address(es):

<http://www.arnet.gov/far>

<http://heron.nrl.navy.mil/contracts/home.htm>

a. FEDERAL ACQUISITION REGULATION CLAUSES

FAR CLAUSE TITLE

52.202-1	-	Definitions (MAR 2001)
52.203-3	-	Gratuities (APR 1984)
52.203-5	-	Covenant Against Contingent Fees (APR 1984)
52.203-6	-	Restrictions On Subcontractor Sales To The Government (JUL 1995)
52.203-7	-	Anti-Kickback Procedures (JUL 1995)
52.203-8	-	Cancellation, Rescission, And Recovery Of Funds For Illegal Or Improper Activity (JAN 1997)
52.203-10	-	Price Or Fee Adjustment For Illegal Or Improper Activity (JAN 1997)
52.203-12	-	Limitation On Payments To Influence Certain Federal Transactions (JUN 1997)
52.204-4	-	Printed Or Copied Double-Sided On Recycled Paper (AUG 2000)
52.209-6	-	Protecting The Government's Interest When Subcontracting With Contractors Debarred, Suspended, Or Proposed For Debarment (JUL 1995)
52.211-15	-	Defense Priority And Allocation Requirements (SEP 1990)
52.215-2	-	Audit And Records-Negotiation (JUNE 1999)
52.215-2	-	Audit And Records-Negotiation (AUG 1996) - Alternate II (APR 1998)
52.215-8	-	Order Of Precedence - Uniform Contract Format (OCT 1997)
52.215-10	-	Price Reduction For Defective Cost Or Pricing Data (OCT 1997)
52.215-11	-	Price Reduction For Defective Cost Or Pricing Data - Modifications (OCT 1997)
52.215-12	-	Subcontractor Cost Or Pricing Data (OCT 1997)
52.215-13	-	Subcontractor Cost Or Pricing Data Modifications (OCT 1997)
52.215-14	-	Integrity Of Unit Prices (OCT 1997)
52.215-15	-	Pension Adjustments And Asset Reversions (DEC 1998)
52.215-17	-	Waiver Of Facilities Capital Cost Of Money (OCT 1997) (<i>will be included if the successful offeror does not propose facilities capital cost of money</i>)
52.215-18	-	Reversion Or Adjustment Of Plans For Post-Retirement Benefits (PRB) Other Than Pensions (OCT 1997)
52.215-19	-	Notification Of Ownership Changes (OCT 1997)
52.215-21	-	Requirements For Cost Or Pricing Data Or Information Other Than Cost or Pricing Data - Modifications (OCT 1997)
52.216-7	-	Allowable Cost And Payment (MAR 2000) (<i>If the contract is with an educational institution, modify the clause by deleting from paragraph (a) "Subpart 31.2" and substitute "Subpart 31.3". If the contract is with a state or local government, delete from paragraph (a)</i>)

“Subpart 31.2” and substitute “Subpart 31.6”. If the contract is with a nonprofit other than an educational institution, a state or local government, or a nonprofit organization exempted under OMB Circular A-122, modify the clause by deleting from paragraph (a) “Subpart 31.2” and substituting “Subpart 31.7”.)

- 52.216-8 - Fixed-Fee (MAR 1997)
- 52.216-11 - Cost Contract - No Fee (APR 1984)
- 52.216-12 - Cost Sharing Contract - No Fee (APR 1984)
- 52.216-15 - Predetermined Indirect Cost Rates (APR 1998)
- 52.219-4 - Notice Of Price Evaluation Preference For HUBZone Small Business Concerns (JAN 1999)
☐ Offeror elects to waive the evaluation preference.
- 52.219-8 - Utilization Of Small Business Concerns (OCT 2000)
- 52.222-1 - Notice To The Government Of Labor Disputes (FEB 1997)
- 52.222-2 - Payment For Overtime Premiums (JUL 1990) -The Use Of Overtime Is Authorized Under This Contract If The Overtime Premium Does Not Exceed ”0”
- 52.222-3 - Convict Labor (AUG 1996)
- 52.222-21 - Prohibition of Segregated Facilities (FEB 1999)
- 52.222-26 - Equal Opportunity (FEB 1999)
- 52.222-35 - Affirmative Action For Disabled Veterans And Veterans Of The Vietnam Era (APR 1998)
- 52.222-36 - Affirmative Action For Workers With Disabilities (JUN 1998)
- 52.222-37 - Employment Reports On Disabled Veterans And Veterans Of The Vietnam Era (JAN 1999)
- 52.223-3 - Hazardous Material Identification And Material Safety Data (JAN 1997)
- 52.223-5 - Pollution Prevention And Right-To-Know Information (APR 1998)
- 52.223-6 - Drug-Free Workplace (MAR 2001)
- 52.223-10 - Waste Reduction Program (AUG 2000)
- 52.223-14 - Toxic Chemical Release Reporting (OCT 2000)
- 52.225-13 - Restrictions On Certain Foreign Purchases (JUL 2000)
- 52.226-1 - Utilization Of Indian Organizations And Indian-Owned Economic Enterprises (JUN 2000)
- 52.227-2 - Notice And Assistance Regarding Patent And Copyright Infringement (AUG 1996)
- 52.227-3 - Patent Indemnity (APR 1984)
- 52.227-11 - Patent Rights - Retention By The Contractor (Short Form) (JUN 1997)
(will be included if the successful offeror is a small business or a non-profit organization)
- 52.227-12 - Patent Rights - Retention By The Contractor (Long Form) (JAN 1997)
(will be included if the successful offeror is not a small business or a non-profit organization)
- 52.228-7 - Insurance - Liability To Third Persons (MAR 1996)
- 52.232-9 - Limitation On Withholding Of Payments (APR 1984)
- 52.232-17 - Interest (JUN 1996)
- 52.232-18 - Availability Of Funds (APR 1984)
- 52.232-20 - Limitation Of Cost (APR 1984) *(Applicable when the contract or task order is fully funded)*
- 52.232-22 - Limitation Of Funds (APR 1984) *(Applicable when the contract or task order is not fully funded)*
- 52.232-23 - Assignment Of Claims (JAN 1986) Alternate I (APR 1984)
- 52.232-25 - Prompt Payment (MAR 2001)
- 52.232-33 - Payment By Electronic Funds Transfer-Central Contractor Registration (MAY 1999)
- 52.233-1 - Disputes (DEC 1998)
- 52.233-3 - Protest After Award (AUG 1996) - Alternate I (JUN 1985)
- 52.237-2 - Protection Of Government Buildings, Equipment And Vegetation (APR 1984)

- 52.237-10 - Identification of Uncompensated Overtime (OCT 1997)
- 52.242-1 - Notice Of Intent To Disallow Costs (APR 1984)
- 52.242-4 - Certification of Final Indirect Costs (JAN 1997)
- 52.242-13 - Bankruptcy (JUL 1995)
- 52.243-2 - Changes - Cost-Reimbursement (AUG 1987) - Alternate II (APR 1984)
- 52.244-2 - Subcontracts (AUG 1998) - Alternate I (AUG 1998)
- 52.244-5 - Competition In Subcontracting (DEC 1996)
- 52.244-6 - Subcontracts For Commercial Items And Commercial Components (OCT 1998)
- 52.245-5 - Government Property (Cost-Reimbursement, Time-And-Material, Or Labor-Hour Contracts) (JAN 1986) (DEVIATION)
- 52.245-18 - Special Test Equipment (FEB 1993)
- 52.245-19 - Government Property Furnished "As-Is" (APR 1984)
- 52.246-23 - Limitation Of Liability (FEB 1997)
- 52.247-1 - Commercial Bill Of Lading Notations (APR 1984)
- 52.247-63 - Preference For U. S. Flag Carriers (JAN 1997)
- 52.249-6 - Termination (Cost-Reimbursement) (SEP 1996)
- 52.249-14 - Excusable Delays (APR 1984)
- 52.251-1 - Government Supply Sources (APR 1984)
- 52.252-6 - Authorized Deviations in Clauses (APR 1984)(fill in Defense Federal Acquisition Regulation Supplement (48 CFR Chapter 2))
- 52.253-1 - Computer Generated Forms (JAN 1991)

b. DEPARTMENT OF DEFENSE FEDERAL ACQUISITION REGULATION CLAUSES

DFARS CLAUSE TITLE

- 252.201-7000 - Contracting Officer's Representative (DEC 1991)
- 252.203-7001 - Prohibition On Persons Convicted Of Fraud Or Other Defense Contract Related Felonies (MAR 1999)
- 252.204-7003 - Control Of Government Personnel Work Product (APR 1992)
- 252.204-7004 - Required Central Contractor Registration (MAR 2000)
- 252.209-7000 - Acquisition From Subcontractors Subject To On-Site Inspection Under The Intermediate-Range Nuclear Forces (INF) Treaty (NOV 1995)
- 252.209-7004 - Subcontracting With Firms That Are Owned Or Controlled By The Government Of A Terrorist Country (MAR 1998)
- 252.209-7005 - Reserve Officer Training Corps and Military Recruiting On Campus (JAN 2000)
- 252.215-7000 - Pricing Adjustments (DEC 1991)
- 252.215-7002 - Cost Estimating System Requirements (OCT 1998)
- 252.223-7006 - Prohibition On Storage And Disposal Of Toxic And Hazardous Materials (APR 1993)
- 252.225-7001 - Buy American Act And Balance Of Payments Program (MAR 1998)
- 252.225-7002 - Qualifying Country Sources As Subcontractors (DEC 1991)
- 252.225-7012 - Preference For Certain Domestic Commodities (AUG 2000)
- 252.225-7031 - Secondary Arab Boycott Of Israel (JUN 1992)
- 252.227-7000 - Non Estoppel (OCT 1966)
- 252.227-7001 - Release Of Past Infringement (AUG 1984)
- 252.227-7013 - Rights In Technical Data -- Noncommercial Items (NOV 1995)
- 252.227-7014 - Rights In Noncommercial Computer Software And Noncommercial Computer Software Documentation (JUN 1995)

- 252.227-7016 - Rights In Bid Or Proposal Information (JUN 1995)
- 252.227-7019 - Validation Of Asserted Restrictions--Computer Software (JUN 1995)
- 252.227-7025 - Limitations On The Use Or Disclosure Of Government-Furnished Information Marked With Restrictive Legends (JUN 1995)
- 252.227-7026 - Deferred Delivery Of Technical Data Or Computer Software (APR 1988)
- 252.227-7030 - Technical Data--Withholding Of Payment (MAR 2000)
- 252.227-7034 - Patents--Subcontracts (APR 1984)
- 252.227-7036 - Declaration Of Technical Data Conformity (JAN 1997)
- 252.227-7037 - Validation Of Restrictive Markings On Technical Data (SEP 1999)
- 252.227-7039 - Patents--Reporting Of Subject Inventions (APR 1990)
- 252.231-7000 - Supplemental Cost Principles (DEC 1991)
- 252.232-7000 - Advanced Payment Pool (DEC 1991)
- 252.232-7009 - Mandatory Payment By Governmentwide Commercial Purchase Card (JUL 2000)
- 252.242-7000 - Post Award Conference (DEC 1991)
- 252.242-7004 - Material Management And Accounting System (DEC 2000)
- 252.243-7002 - Requests For Equitable Adjustment (MAR 1998)
- 252.244-7000 - Subcontracts For Commercial Items And Commercial Components (DOD Contracts) (MAR 2000)
- 252.245-7001 - Reports Of Government Property (MAY 1994)
- 252.246-7001 - Warranty Of Data (DEC 1991)
- 252.247-7023 - Transportation Of Supplies By Sea (MAR 2000)
- 252.247-7024 - Notification Of Transportation Of Supplies By Sea (MAR 2000)
(will be included if the successful offeror made a negative response to the inquiry at DFARS 252.247-7022)
- 252.251-7000 - Ordering From Government Supply Sources (MAY 1995)

I-2 FAR 52.223-11 - OZONE-DEPLETING SUBSTANCES (MAR 2001)

(a) *Definitions.* "Ozone-depleting substance", as used in this clause, means any substance the Environmental Protection Agency designates in 40 CFR Part 82 as –

(1) Class I, including, but not limited to, chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or

(2) Class II, including, but not limited to, hydrochlorofluorocarbons.

(b) The Contractor shall label products which contain or are manufactured with ozone-depleting substances in the manner and to the extent required by 42 U.S.C. 7671j (b), (c), and (d) and 40 CFR Part 82, Subpart E, as follows:

WARNING

Contains (or manufactured with, if applicable) _____, a substance(s) which harm(s) public health and environment by destroying ozone in the upper atmosphere.

*The Contractor shall insert the name of the substance(s).

PART III - LIST OF DOCUMENTS, EXHIBITS, AND OTHER ATTACHMENTS
SECTION J
LIST OF ATTACHMENTS

- J-1** Attachment (1) - Statement Of Work - 6 Pages, With Exhibit A - DD Form 1423, Contract Data Requirements List, 4 Pages.
- J-2** Attachment (*) – Accounting and Appropriation Data- 1 page. *
- (* To be included at time of award)*

PART IV - REPRESENTATIONS AND INSTRUCTIONS
SECTION - K
REPRESENTATIONS, CERTIFICATIONS
AND OTHER STATEMENTS OF OFFERORS OR RESPONDENTS

K-1 Representations, Certifications, and Other Statements of Offerors or Respondents

Each Offeror must submit a completed Representations, Certifications, and Other Statements Of Offerors or Respondents with its proposal which is available electronically in full text at
<http://heron.nrl.navy.mil/contracts/rep&certs.htm>

K-2 FILL IN FOR FAR 52.219-1 - SMALL BUSINESS PROGRAM REPRESENTATIONS (MAR 2001)

The fill in information is as follows:

The NAICS code for this acquisition is 541512

The small business size standard is \$18M.

SECTION L
INSTRUCTIONS CONDITIONS AND NOTICES
TO OFFERORS OR RESPONDENTS

L-1 52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

<http://www.arnet.gov/far>

<http://heron.nrl.navy.mil/contracts/home.htm>

FAR CLAUSE TITLE

52.204-6	-	Data Universal Numbering System (DUNS) Number (JUNE 1999)
52.214-34	-	Submission Of Offers In The English Language (APR 1991)
52.214-35	-	Submission Of Offers In U.S. Currency (APR 1991)
52.215-1	-	Instructions To Offerors- Competitive Acquisition (MAR 2001)
52.215-16	-	Facilities Capital Cost Of Money (OCT 1997)
52.252-5	-	Authorized Deviations In Provisions (APR 1984)
252.211-7005	-	Substitutions For Military Or Federal Specifications And Standards (AUG 2000)

L-2 FAR 52.211-14 - NOTICE OF PRIORITY RATING FOR NATIONAL DEFENSE USE (SEP 1990)

Any contract awarded as a result of this solicitation will be a ☐ DX rated order; ☒ DO rated order certified for national use under the Defense Priorities and Allocations system (DPAS) (15 CFR 700), and the Contractor will be required to follow all of the requirements of this regulation.

L-3 FAR 52.215-20 REQUIREMENTS FOR COST OR PRICING DATA OR INFORMATION OTHER THAN COST OR PRICING DATA (OCT 1997)

(a) *Exceptions from cost or pricing data.* (1) In lieu of submitting cost or pricing data, offerors may submit a written request for exception by submitting the information described in the following subparagraphs. The Contracting Officer may require additional supporting information, but only to the extent necessary to determine whether an exception should be granted, and whether the price is fair and reasonable.

(i) *Identification of the law or regulation establishing the price offered.* If the price is controlled under law by periodic rulings, reviews, or similar actions of a governmental body, attach a copy of the controlling document, unless it was previously submitted to the contracting office.

(ii) *Commercial item exception.* For a commercial item exception, the offeror shall submit, at a minimum, information on prices at which the same item or similar items have previously been sold in the commercial market that is adequate for evaluating the reasonableness of the price for this acquisition. Such information may include--

(A) For catalog items, a copy of or identification of the catalog and its date, or the appropriate pages for the offered items, or a statement that the catalog is on file in the buying office to which the proposal is being submitted. Provide a copy or describe current discount policies and price lists (published or unpublished), e.g., wholesale, original equipment manufacturer, or reseller. Also explain the basis of each

offered price and its relationship to the established catalog price, including how the proposed price relates to the price of recent sales in quantities similar to the proposed quantities.

(B) For market priced items, the source and date or period of the market quotation or other basis for market price, the base amount, and applicable discounts. In addition, describe the nature of the market.

(C) For items included on an active Federal Supply Service Multiple Award Schedule contract, proof that an exception has been granted for the schedule item.

(2) The offeror grants the Contracting Officer or an authorized representative the right to examine, at any time before award, books, records, documents, or other directly pertinent records to verify any request for an exception under this provision, and the reasonableness of price. For items priced using catalog or market prices, or law or regulation, access does not extend to cost or profit information or other data relevant solely to the offeror's determination of the prices to be offered in the catalog or marketplace.

(b) *Requirements for cost or pricing data.* If the offeror is not granted an exception from the requirement to submit cost or pricing data, the following applies:

(1) The offeror shall prepare and submit cost or pricing data and supporting attachments in accordance with Table 15-2 of FAR 15.408.

(2) As soon as practicable after agreement on price, but before contract award (except for unpriced actions such as letter contracts), the offeror shall submit a Certificate of Current Cost or Pricing Data, as prescribed in FAR 15.406-2.

L-4 FAR 52.216-1 - TYPE OF CONTRACT (APR 1984)

The Government contemplates award of a Cost Plus Fixed Fee completion type contract resulting from this solicitation.

L-5 FAR 52.233-2 - SERVICE OF PROTEST (AUG 1996)

(a) Protests, as defined in Section 33.101 of the Federal Acquisition Regulation, that are filed directly with an agency, and copies of any protests that are filed with the General Accounting Office (GAO) shall be served on the Contracting Officer (addressed as follows) by obtaining written and dated acknowledgment of receipt from the Control Desk, Code 3200, Bldg. 222, Rm. 115, Naval Research Laboratory, 4555 Overlook Ave., S.W., Washington DC 20375-5326.

(b) The copy of any protest shall be received in the office designated above within one day of filing a protest with the GAO.

L-6 DFARS 252.227-7017 - IDENTIFICATION AND ASSERTION OF USE, RELEASE, OR DISCLOSURE RESTRICTIONS (JUN 1995)

- (a) The terms used in this provision are defined in following clause or clauses contained in this solicitation--
- (1) If a successful offeror will be required to deliver technical data, the Rights in Technical Data--Noncommercial Items clause, or, if this solicitation contemplates a contract under the Small Business Innovative Research Program, the Rights in Noncommercial Technical Data and Computer Software--Small Business Innovative Research (SBIR) Program clause.
 - (2) If a successful offeror will not be required to deliver technical data, the Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation clause, or, if this solicitation contemplates a contract under the Small Business Innovative Research Program, the Rights in Noncommercial Technical Data and Computer Software--Small Business Innovative Research (SBIR) Program clause.
- (b) The identification and assertion requirements in this provision apply only to technical data, including computer software documents, or computer software to be delivered with other than unlimited rights. For contracts to be awarded under the Small Business Innovative Research Program, the notification requirements do not apply to technical data or computer software that will be generated under the resulting contract. Notification and identification is not required for restrictions based solely on copyright.
- (c) Offers submitted in response to this solicitation shall identify, to the extent known at the time an offer is submitted to the Government, the technical data or computer software that the Offeror, its subcontractors or suppliers, or potential subcontractors or suppliers, assert should be furnished to the Government with restrictions on use, release, or disclosure.
- (d) The Offeror's assertions, including the assertions of its subcontractors or suppliers or potential subcontractors or suppliers shall be submitted as an attachment to its offer in the following format, dated and signed by an official authorized to contractually obligate the Offeror:
- Identification and Assertion of Restrictions on the Government's Use, Release, or Disclosure of Technical Data or Computer Software.
- The Offeror asserts for itself, or the persons identified below, that the Government's rights to use, release, or disclose the following technical data or computer software should be restricted:

Technical Data or Computer Software to be Furnished With Restrictions*	Basis for Assertion**	Asserted Rights Category***	Name of Person Asserting Restrictions****
(LIST)*****.	(LIST)	(LIST)	(LIST)

* For technical data (other than computer software documentation) pertaining to items, components, or processes developed at private expense, identify both the deliverable technical data and each such items, component, or process. For computer software or computer software documentation identify the software or documentation.

** Generally, development at private expense, either exclusively or partially, is the only basis for asserting restrictions. For technical data, other than computer software documentation, development refers to development of the item, component, or process to which the data pertain. The Government's rights in computer software documentation generally may not be restricted. For computer software, development refers to the software. Indicate whether development was accomplished exclusively or partially at private expense. If development was not accomplished at

private expense, or for computer software documentation, enter the specific basis for asserting restrictions.

*** Enter asserted rights category (e.g., government purpose license rights from a prior contract, rights in SBIR data generated under another contract, limited, restricted, or government purpose rights under this or a prior contract, or specially negotiated licenses).

**** Corporation, individual, or other person, as appropriate.

***** Enter "none" when all data or software will be submitted without restrictions.

Date

Printed Name and Title

Signature

(End of identification and assertion)

- (e) An offeror's failure to submit, complete, or sign the notification and identification required by paragraph (d) of this provision with its offer may render the offer ineligible for award.
- (f) If the Offeror is awarded a contract, the assertions identified in paragraph (d) of this provision shall be listed in an attachment to that contract. Upon request by the Contracting Officer, the Offeror shall provide sufficient information to enable the Contracting Officer to evaluate any listed assertion.

L-7 DFARS 252.227-7028 - TECHNICAL DATA OR COMPUTER SOFTWARE PREVIOUSLY DELIVERED TO THE GOVERNMENT (JUN 1995)

The Offeror shall attach to its offer an identification of all documents or other media incorporating technical data or computer software it intends to deliver under this contract with other than unlimited rights that are identical or substantially similar to documents or other media that the Offeror has produced for, delivered to, or is obligated to deliver to the Government under any contract or subcontract. The attachment shall identify - -

- (a) The contract number under which the data or software were produced;
- (b) The contract number under which, and the name and address of the organization to whom, the data or software were most recently delivered or will be delivered; and
- (c) Any limitations on the Government's rights to use or disclose the data or software, including, when applicable, identification of the earliest date the limitations expire.

L-8 GOVERNMENT-FURNISHED PROPERTY

No material, labor, or facilities will be furnished by the Government unless provided for in the solicitation.

L-9 INQUIRIES CONCERNING THE RFP

Any questions concerning the RFP must be submitted in writing to the Contracting Officer at the location noted in blocks 7 and 9 of the Standard Form 33, "Solicitation, Offer and Award," no less than fifteen (15) days before closing. The Government will not consider questions received after this date. Offerors are cautioned against directing any questions concerning this RFP to technical personnel at the Naval Research Laboratory.

L-10 INSTRUCTIONS FOR SUBMISSION AND INFORMATION REQUIRED TO EVALUATE PROPOSALS

(1) Information for the technical/management proposal shall be placed in Volume I and be completely separate from the business proposal (Volume II).

(2) Proposal Identification/Mailing - The proposal should be packaged for delivery so as to permit safe and timely arrival at destination. The proposal package should be sent to the address shown in Block 7 of the RFP face page and marked:

Solicitation No. N00173-01-R-SE04

Closing Date: (As specified in Block 9, RFP face page)

Attn: Code 3235

(3) Proposal Format and Length - No attempt is made to restrict the proposal format and style. However, the proposal should be written and organized so as to be compatible with the RFP, the Statement of Work, company's organization and accounting structure, and proposed cost estimate. Offerors are encouraged to use recycled paper and maximize the use of double sided copying when preparing responses to solicitations.

L-11 VOLUME I - TECHNICAL PROPOSAL

REQUIRED COPIES: 1 ORIGINAL AND 3 COPIES.

(1) Include a matrix indicating proposed labor hours by skill category required to perform the statement of work. This matrix shall not contain labor rates or any other indication of price.

(2) The following information is required for evaluation of your technical/management:

PERSONNEL QUALIFICATIONS– Offeror shall provide evidence that it has, or has the ability to obtain personnel with the technical qualifications and experience to accomplish the tasks as described in the Statement of Work.

TECHNICAL UNDERSTANDING - The Offeror shall provide a detailed narrative demonstrating its technical approach and understanding of the technical requirement.

CORPORATE RESOURCES: The Offeror shall demonstrate that it has the equipment, facilities, management support and financial capability necessary to perform the tasks in accordance with the Statement of Work.

PAST PERFORMANCE INFORMATION

(a) Offerors shall submit the following information as part of their proposal. (Offerors are encouraged to submit the information prior to other parts of the proposal to assist the government in reducing the length of the evaluation period.) List the last 5 contracts or orders completed during the past 3 years for items similar in nature to this requirement.

1. Name of customer
2. Contract/order number
3. Contract type
4. Total contract value

5. Description of the system
6. Contracting officer/customer and telephone number
7. Contracting officer's representative, program manager, or similar official and telephone number

(b) Offerors shall contact the contracting organizations identified pursuant to paragraph (a) as soon as possible and request them to send past performance information on the identified contracts to the address in Block 7 of the face page of this solicitation. The past performance report which is available electronically in full text at <http://heron.nrl.navy.mil/contracts/home.htm> is to be provided to the contracting organization for this purpose. If the contracting organization has already collected past performance information on the contract pursuant to FAR Subpart 42.15, the format used to collect the information may be used instead of the past performance report.

(c) Offerors may include in their proposals specific information relating to problems encountered in performing the identified contracts and any corrective actions by the offeror. Offerors should not provide general information on their performance on the identified contracts as this will be obtained from the contracting organizations.

L-12 VOLUME II - BUSINESS PROPOSAL

REQUIRED COPIES: 1 ORIGINAL AND 3 COPIES

(1) COST PROPOSAL

The offeror shall submit a business proposal that includes a cost proposal with supporting information for each cost element consistent with offeror's cost accounting system. The supporting breakdown should include such elements as materials, direct labor, indirect cost, and other costs such as travel. The offeror shall provide exhibits as necessary to substantiate each cost element. Should rates be used in the proposal, which are not DCAA approved, the offeror shall provide complete documentation and the rationale for their use at time of proposal submission. However, offerors are advised to use actual labor rates of proposed personnel as the basis for estimating labor costs when practicable.

L-13 COST CONTRACT (NO FEE) AND COST-SHARING PROPOSALS

- (a) If a cost-reimbursement contract without fee is proposed by the offeror and accepted by the Government, the following changes will be made in the contractual award document:
 - (1) Section B will be revised to delete the columns "Fixed Fee" and "Total Est Cost Plus Fixed Fee."
 - (2) Section G will be revised to delete the provision, "Payment of Fixed Fee (Completion Form)."
 - (3) Section I will be revised to substitute the clause FAR 52.216-11, Cost Contract-No Fee (APR 1984), for the clause FAR 52.216-8, Fixed Fee (MAR 1997).
- (b) If a cost-sharing contract is proposed by the offeror and accepted by the Government, the following changes will be made in the contractual award document:
 - (1) Section B will be revised to delete the columns "Estimated Cost", "Fixed Fee" and "Total Est Cost Plus Fixed Fee" and insert in lieu thereof columns entitled "Estimated Allowable Cost" and "Estimated Cost to the Government."
 - (2) Section G will be revised to delete the provision, "Payment of Fixed Fee (Completion Form)"
 - (3) Section H will be revised to include the following provision:

COST SHARING

Both the estimated allowable cost of performing each CLIN and the estimated cost to the Government of each CLIN are set forth in Section B of this contract. The difference between these amounts represents the contractor's share of the estimated allowable cost of the CLIN. In order to accomplish this sharing by the parties, the Contractor shall be reimbursed by the Government for incurred allowable costs of performing each CLIN in the same proportion as the total estimated cost to the Government of the CLIN is to the total estimated allowable cost of the CLIN.

- (4) Section I will be revised to substitute the clause FAR 52.216-12, Cost Sharing Contract --No Fee (APR 1984), for the clause FAR 52.216-8, Fixed Fee (MAR 1997).

SECTION M EVALUATION FACTORS FOR AWARD

M-1 EVALUATION

Award will be made to that offeror whose proposal is determined to be the best value to the Government, proposed cost and other factors considered. The Government reserves the right to make award to other than the low offeror. Although technical considerations are more important than the cost factor, the closer the technical scores of the various proposals are to one another, the more important the business considerations become.

M-2 EVALUATION FACTORS FOR AWARD

Proposals will be evaluated in accordance with the following criteria. The technical factor is more important than the cost factor. The sub factors within the major technical category are listed in ascending order of importance.

M-2-1. TECHNICAL

(1) PERSONNEL QUALIFICATIONS

The proposed personnel will be evaluated on the experience and qualifications of the proposed personnel relevant to the proposed task; the quantity and quality of the Offeror's experience relevant to the proposed task; and the previous experience of the key personnel including the degree to which they meet the requirements set forth in Section 7.0 of the Statement of Work.

(2) TECHNICAL UNDERSTANDING

The Offeror shall also be evaluated on its demonstrated understanding of the requirements and the soundness of their technical approach. This factor will be based on the offeror's effective understanding of the Statement of Work, including key aspects of evaluating and developing software applications and algorithms.

(3) CORPORATE RESOURCES

The proposals will be evaluated on the offeror's approach and experience in providing management support, facilities, equipment and financial backing to personnel assigned to accomplish the tasks listed in Section 6.0 of the Statement of Work.

(4) PAST PERFORMANCE

Past performance will be evaluated on the basis of the quality of the work performed, timeliness of performance, cost control, and business relations. The evaluation will be based on the information provided pursuant to Section L and other sources if available. The evaluation will take into account past performance information regarding predecessor companies, subcontractors that will perform major or critical aspects of the requirement, or the proposed project manager or key personnel responsible for major or critical aspects of the requirement. Offerors that have no relevant performance history or for which past performance information is not available will not be evaluated favorably or unfavorably on past performance. The government may begin proposal evaluation prior to receipt of past performance information. If, after completion of proposal evaluation except evaluation of past performance, the contracting officer determines that evaluation of past performance will not affect the outcome of competitive selection, the contracting officer may waive its evaluation in accordance with

FAR 15.304(c)(3)(iii).

M-2-2 COST TO THE GOVERNMENT

Proposed estimated cost to the Government. The Government may adjust the proposed cost for purposes of evaluation based upon an evaluation of cost realism. Cost Realism means that the costs in an offeror's proposal are realistic for the work to be performed; reflect a clear understanding of the requirements; and are consistent with the various elements of the offeror's technical proposal. The cost realism evaluation includes an analysis of the adequacy of the hours, labor mix, and other direct costs to perform the work as proposed in the technical proposal as well as the proposed labor and indirect rates. It also includes evaluation of the likelihood that the risks inherent in the offeror's technical approach will result in higher actual costs than anticipated.

STATEMENT OF WORK
FOR
NAVAL RESEARCH LABORATORY

Development of a Fused Ice Classification Scheme

30 April 2001

1.0 Introduction

This Statement of Work (SOW) defines the requirements for the development of methods to expand the geographic areas of application of the ARKTOS software so that the software can be applied over the whole Arctic. The objective of this effort shall define further development of techniques to integrate the results of a wide-array of multi-sensor sea-ice classification algorithms, and use of the fused classifications to automatically generate sea ice concentration maps.

2.0 Background and Mission

The mission of the National Ice Center (NIC) is to provide global sea ice analyses, forecasts, outlooks and ship routing recommendations within the marginal sea ice zone of all Arctic and Antarctic seas. The Center combines the technology, manpower and financial resources of the United States Navy, the National Oceanic and Atmospheric Administration (NOAA), and the United States Coast Guard to fulfill this mission.

The NIC science plan calls for automation of the process of creating global (1:10 million scale) sea ice charts for the Arctic and Antarctic. Towards that goal, the NIC science team has developed and/or evaluated a suite of existing sea ice algorithms that automatically derive sea ice concentration, and in some cases sea ice type, from a variety of satellite sensors. These algorithms/systems/data include:

- ARKTOS: a knowledge-based system to classify Radarsat SAR imagery (Soh and Tsatsoulis, 1999)
- NASA Team thin ice algorithm: an SSM/I ice concentration algorithm (Cavalieri, 1994)
- Bootstrap algorithm: an SSM/I ice concentration algorithm (Comiso, 1986)
- MODIS Ice: an ice/no ice mapper from NASA's MODIS sensor (Hall, 1998)
- QuikScat: an ice/no ice classifier from the SeaWinds QuikScat sensor (Remund, et al, 2000)
- Polar Ice Prediction System: the Navy's operational sea ice model (Preller, 1985)
- International Arctic Buoy program data
- Others, to be developed as new data become available

The ARKTOS algorithm requires further development before it can be applied throughout the Northern Hemisphere ice covered seas. Upon completion of this effort, the existing validated algorithms (listed above) shall be combined in an intelligent manner with the end goal of producing global (Northern and Southern Hemisphere) ice charts similar in format/style to those currently produced by the NIC. (See - <http://www.natice.noaa.gov>).

References:

Cavalieri, D. (1994). *A microwave technique for mapping thin sea-ice*, Jnl. Geophys. Res., vol. 99, no. C6, pp. 12,561-12572, 1994.

Comiso, J. (1986). *Characteristics of Arctic winter sea-ice from satellite passive microwave and infrared observations*, Jnl. Geophys. Res., vol. 89, no. C1, pp. 975-994.

Hall, D.K., A.B. Tait, G.A. Riggs, V.V. Salomonson, with contributions from J.Y.L. Chien, A.G. Klein, October 7, 1998: "Algorithm Theoretical Basis Document (ATBD) for the MODIS Snow-, Lake Ice- and Sea Ice-Mapping Algorithms. Version 4.0." (Available at http://snowmelt.gsfc.nasa.gov/MODIS_Snow/publications.html).

Preller, R.H., 1985, "The NORDA/FNOC Polar Ice Prediction System (PIPS) - Arctic: A technical description", NORDA Report 108, 60 pp., Naval Ocean Research and Development Act., NSTL, Miss.

Remund, Q.P., D.G. Long, and M.R. Drinkwater, (2000). "An Iterative Approach to Multisensor Sea Ice Classification," *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 38, No. 4, pp. 1843-1856.

Soh, L-K. and C. Tsatsoulis (1999). Multisource Data and Knowledge Fusion for Intelligent SAR Sea Ice Classification, Proceedings of the 1999 International Geoscience and Remote Sensing Symposium (IGARSS'99), Hamburg, Germany.

3.0 Facilities and Services

The Information Technology Department at the NIC supports a very capable network of computing devices. NIC "sees" the Internet (and the rest of the Suitland, MD NOAA/NESDIS campus) at 100baseT over a dedicated FDDI line. The FDDI link brings in over 2 gigabytes of NOAA AVHRR images daily. The NIC has two additional dedicated leased lines. One, a partial T-1 (256kb) line (the "NAIL"), connects NIC and the Canadian Ice Service, and is used primarily for the near-real-time transfer of Radarsat images. The second is an FNS line running at 10baseT to the U.S. Government's HAWKNET POP in Silver Spring, MD. The HAWKNET is an ATM network connecting the U.S. Governments Major Shared Processing Centers; this line brings over 2 gigabytes of DMSP OLS data into the NIC daily. The FDDI and FNS lines are brought into NIC using a Cisco 4500 series router, the NAIL has its own Cisco 2500 series router. Data is made available throughout the agency via a network made up of four 3Com 3900 and one 9300 switch using certified CAT5 fast Ethernet. The computing devices at NIC consist of approximately 30 Sun Ultra-SPARC workstations (Solaris OS) and 60 Pentium II and III (Windows NT OS) desktop computers. Satellite imagery is primarily exploited on the Sun SPARC workstations using government and commercial image processing applications including TeraScan and the Naval Satellite Image Processing System (NSIPS). NIC also uses ESRI's Geographic Information System suite of products (ArcInfo & ArcView) in its product production. Future development efforts at the NIC include plans to fully transition the operational ice analysis and GIS systems to a Windows NT environment, with some background processing remaining on Solaris servers.

4.0 Objective

There are two major objectives of this effort:

1. Evaluate methods to expand the geographic areas of application of the ARKTOS software so that the software can be applied over the whole Arctic.
2. Develop techniques to integrate the results of sea-ice classification algorithms, and use the fused classifications to generate concentration maps.

5.0 Scope

The scope of this effort encompasses dealing with members of the Science and Applied Technology Department, the Operations Department, and the Information Technology Department at the NIC, and the scientific staff of the Naval Research Laboratory Stennis Space Center.

6.0 Specific Tasks

6.1. The contractor shall integrate image processing and image segmentation software that was developed at the University of Kansas (KU) with automated learning techniques to generate classification heuristics for all areas of the Arctic:

- a. The NIC will use the ASIS segmentation software developed by KU to automatically segment SAR images and then manually classify them. The contractor will then re-segment these images using KU's watershed segmentation algorithm to identify image features.
- b. Using ARKTOS software, the contractor shall extract the characteristics of the features.
- c. For each of the four sea ice classes currently identified by ARKTOS (open water, new ice, first-year ice, old ice), the contractor shall define a training and an independent test set of features with their attributes (characteristics).
- d. The contractor shall use the training set to teach a backpropagation neural network to classify sea ice.
- e. The Contractor shall use the independent test set to evaluate the trained backpropagation network.

6.2. To evaluate the efficacy of the neural network technique, the Contractor shall test the system against the classification results of ARKTOS on Beaufort Sea imagery. If the results are satisfactory, development shall proceed to other areas of the Arctic.

If the results of the backpropagation neural network are not satisfactory, the Contractor shall examine other automated learning techniques, such as rule induction and fuzzy clustering. Each of these techniques shall be compared to the classification results of ARKTOS on Beaufort Sea imagery.

6.3. The Contractor shall develop techniques to integrate the results of sea-ice classification algorithms, and use the assimilated classifications to generate concentration maps. The Contractor shall design, implement and test software programs that allow the assimilation of classification results of various sea ice classification algorithms. The NIC has available a suite of classification algorithms that use different data as input (see section 2). These algorithms/data sets shall be expanded in the future as development continues in academia and government. The data sources available will also change; for example, ARKTOS will be applied to ALOS and/or ENVISAT SAR data. These classification algorithms generate sea ice classification and concentration products that are of varying resolutions and accuracy, and depending on the data type used as input may not provide continuous and complete coverage of the Arctic.

6.4. The contractor shall examine methods to assimilate the results of the algorithms referenced in section 2 and provide the NIC analysts with a complete daily map of sea ice concentration of the Arctic. The Contractor shall build upon data assimilation techniques developed in the meteorological community (Partington and Steffen, 1998).

Reference:

Partington, K.C. and S. Steffen, 1998. "Proposed Development of a Joint Scientific-Operational Arctic-Wide Sea Ice Product". Available at <http://www.natice.noaa.gov>.

7.0 Minimum Skills and Experience Requirements

The Contractor shall provide resumes of each individual proposed on the task addressing experience related to the skill set described below and availability of the personnel at the time of award.

Applicants shall have the following minimum qualifications:

- A degree from an accredited university in a physical science, or in mathematics, computer science or engineering with additional course work in the hard sciences.
- At least 3 peer reviewed journal publications pertaining to the development of image classification and/or knowledge-based systems for satellite-based sea ice applications.
- One to three years' experience in the design and use of software tools for the manipulation of satellite data and model output.
- One to three years' experience with HTML and/or other web programming languages, including Java.
- One to three years' specialized programming experience with FORTRAN or C and experience with one or more graphics analysis packages. Experience with image analysis software is required (e.g. MATLAB, IDL, PV Wave, ERDAS Imagine). A background in GIS, including theory, practical application and programming of various GIS tools such as ESRI's ARCINFO, ARCVIEW is desirable.

8.0 Place of Performance

The Contractors facility with occasional travel to the NIC and also to the Stennis Space Center.

9.0 Government Furnished Equipment and Facility

The government will furnish:

White Paper on Proposed Development of a Joint Scientific- Operational Arctic-Wide Sea Ice Product, K.C. Partington and K. Steffen, 1998.

ARKTOS software, with complete users' and programmers' guides.

Access to contractor and/or other support to use the ASIS segmentation software developed by KU to automatically segment SAR images and then manually classify them.

Documentation fully describing the Sea Ice Mapping System (SIMS)- the operational system for creation of NIC sea ice charts, based on the ERDAS Imagine and ESRI Arc Info product suites.

10.0 Period of Performance

Start Date: Date of Award (Approximately July or August of 2001)
End Date: SEP 30, 2004

11.0 Deliverable Data Items

The contractor shall deliver the items specified in the DD Form 1423(s), Contract Data Requirements List (CDRL) for the work performed under this Statement of Work. The CDRL identifies the type of data, the number of copies, frequency of submission and the SOW reference requiring the data.

(2 Data Items)

Public reporting burden for this collection of information is estimated to average 220 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

17. PRICE GROUP

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TOTAL PRICE**

CONTRACT DATA REQUIREMENTS LIST

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Public reporting burden for this collection of information is estimated to average 440 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503. Please DO NOT RETURN your form to either of these addresses. Send completed form to the Government Issuing Contracting Officer for the Contract/PR No. listed in Block E.

A. CONTRACT LINE ITEM NO. 0002				B. EXHIBIT A		C. CATEGORY: TDP _____ TM _____ OTHER _____												
D. SYSTEM / ITEM				E. CONTRACT / PR NO. N00173-01-R-SE04		F. CONTRACTOR												
1. DATA ITEM NO. A003		2. TITLE OF DATA ITEM *Technical Report				3. SUBTITLE												
4. AUTHORITY (Data Acquisition Document No.)				5. CONTRACT REFERENCE SOW Section 6.0		6. REQUIRING OFFICE COR(See Section G.2)												
7. DD 250 REQ LT		9. DIST STATEMENT REQUIRED		10. FREQUENCY OneTime		12. DATE OF FIRST SUBMISSION 6 Mo. DAC		14. DISTRIBUTION										
8. APP CODE				11. AS OF DATE Contract Award		13. DATE OF SUBSEQUENT SUBMISSION N/A		a. ADDRESSEE <table border="1"> <tr> <th colspan="3">b. COPIES</th> </tr> <tr> <th>Draft</th> <th colspan="2">Final</th> </tr> <tr> <td></td> <td>Reg</td> <td>Repro</td> </tr> </table>		b. COPIES			Draft	Final			Reg	Repro
b. COPIES																		
Draft	Final																	
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16. REMARKS Shall provide initial evaluation of results from use of backpropagation neural network to classify sea ice in the Beaufort Sea. Report on performance as compared to ARKTOS classification results.						To be provided at time of award 15. TOTAL →												
1. DATA ITEM NO. A004		2. TITLE OF DATA ITEM *Technical Report				3. SUBTITLE												
4. AUTHORITY (Data Acquisition Document No.)				5. CONTRACT REFERENCE SOW Section 6		6. REQUIRING OFFICE COR (See Section G.2)												
7. DD 250 REQ LT		9. DIST STATEMENT REQUIRED		10. FREQUENCY OneTime		12. DATE OF FIRST SUBMISSION 12 mo. DAC		14. DISTRIBUTION										
8. APP CODE				11. AS OF DATE Contract Award		13. DATE OF SUBSEQUENT SUBMISSION N/A		a. ADDRESSEE <table border="1"> <tr> <th colspan="3">b. COPIES</th> </tr> <tr> <th>Draft</th> <th colspan="2">Final</th> </tr> <tr> <td></td> <td>Reg</td> <td>Repro</td> </tr> </table>		b. COPIES			Draft	Final			Reg	Repro
b. COPIES																		
Draft	Final																	
	Reg	Repro																
16. REMARKS Report on final selection of methodology for extension of ARKTOS globally.						To be provided at time of award 15. TOTAL →												
1. DATA ITEM NO. A005		2. TITLE OF DATA ITEM *Technical Report				3. SUBTITLE												
4. AUTHORITY (Data Acquisition Document No.)				5. CONTRACT REFERENCE SOW Section 6		6. REQUIRING OFFICE COR (See Section G.2)												
7. DD 250 REQ LT		9. DIST STATEMENT REQUIRED		10. FREQUENCY OneTime		12. DATE OF FIRST SUBMISSION 18 Mo. DAC		14. DISTRIBUTION										
8. APP CODE				11. AS OF DATE Contract Award		13. DATE OF SUBSEQUENT SUBMISSION N/A		a. ADDRESSEE <table border="1"> <tr> <th colspan="3">b. COPIES</th> </tr> <tr> <th>Draft</th> <th colspan="2">Final</th> </tr> <tr> <td></td> <td>Reg</td> <td>Repro</td> </tr> </table>		b. COPIES			Draft	Final			Reg	Repro
b. COPIES																		
Draft	Final																	
	Reg	Repro																
16. REMARKS Final report on extension of ARKTOS to entire Arctic.						To be provided at time of award 15. TOTAL →												
1. DATA ITEM NO. A006		2. TITLE OF DATA ITEM *Technical Report				3. SUBTITLE												
4. AUTHORITY (Data Acquisition Document No.)				5. CONTRACT REFERENCE SOW Section 6		6. REQUIRING OFFICE COR(See Section G.2)												
7. DD 250 REQ LT		9. DIST STATEMENT REQUIRED		10. FREQUENCY OneTime		12. DATE OF FIRST SUBMISSION 24 mo. DAC		14. DISTRIBUTION										
8. APP CODE				11. AS OF DATE Contract Award		13. DATE OF SUBSEQUENT SUBMISSION N/A		a. ADDRESSEE <table border="1"> <tr> <th colspan="3">b. COPIES</th> </tr> <tr> <th>Draft</th> <th colspan="2">Final</th> </tr> <tr> <td></td> <td>Reg</td> <td>Repro</td> </tr> </table>		b. COPIES			Draft	Final			Reg	Repro
b. COPIES																		
Draft	Final																	
	Reg	Repro																
16. REMARKS Documented plan for concept of operations for creation of an intelligent data assimilation scheme for creation of an automated global sea ice mapping product suitable for transmission to NIC customers.						To be provided at time of award 15. TOTAL →												
G. PREPARED BY Naval Research Laboratory - SSC				H. DATE JUN 2001		I. APPROVED BY		J. DATE										

17. PRICE GROUP
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CONTRACT DATA REQUIREMENTS LIST

(2 Data Items)

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A. CONTRACT LINE ITEM NO. 0002		B. EXHIBIT A		C. CATEGORY: TDP _____ TM _____ OTHER <u>X</u>	
D. SYSTEM / ITEM		E. CONTRACT / PR NO. N00173-01-R-SE04		F. CONTRACTOR	
1. DATA ITEM NO. A007	2. TITLE OF DATA ITEM *Technical Report			3. SUBTITLE	
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE SOW Section 6.0		6. REQUIRING OFFICE COR(See Section G.2)	
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED	10. FREQUENCY OneTime	12. DATE OF FIRST SUBMISSION 30 mo. DAC	14. DISTRIBUTION	
8. APP CODE		11. AS OF DATE Contract Award	13. DATE OF SUBSEQUENT SUBMISSION N/A	a. ADDRESSEE	b. COPIES Draft Final Reg Repr
16. REMARKS Initial results from intelligent data assimilation scheme.				15. TOTAL →	

1. DATA ITEM NO. A008	2. TITLE OF DATA ITEM *Technical Reports			3. SUBTITLE	
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE SOW Section 6.0		6. REQUIRING OFFICE COR(See section G.2)	
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED	10. FREQUENCY OneTime	12. DATE OF FIRST SUBMISSION 36 mo. DAC	14. DISTRIBUTION	
8. APP CODE		11. AS OF DATE Contract Award	13. DATE OF SUBSEQUENT SUBMISSION N/A	a. ADDRESSEE	b. COPIES Draft Final Reg Repr
16. REMARKS Validated output from the intelligent data assimilation scheme, namely a sea-ice chart suitable for delivery to NIC customers.				15. TOTAL →	

G. PREPARED BY Naval Research Laboratory -SSC		H. DATE JUN 2001	I. APPROVED BY		J. DATE
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A. CONTRACT LINE ITEM NO. 0002		B. EXHIBIT A		C. CATEGORY: TDP _____ TM _____ OTHER _____ X	
D. SYSTEM / ITEM		E. CONTRACT / PR NO. N00173-01-R-SE04		F. CONTRACTOR	
1. DATA ITEM NO. A009	2. TITLE OF DATA ITEM **Software/Algorithm Media, documentation and instructions for exercising all software algorithm provided			3. SUBTITLE	
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE Section B, C, F and SOW		6. REQUIRING OFFICE COR(See Section G.2)	
7. DD 250 REQ LT	9. DIST STATEMENT REQUIRED	10. FREQUENCY As Required	12. DATE OF FIRST SUBMISSION **	14. DISTRIBUTION	
8. APP CODE		11. AS OF DATE **	13. DATE OF SUBSEQUENT SUBMISSION **	a. ADDRESSEE	b. COPIES Draft Final Reg Repr
16. REMARKS **Shall include computer programs, object, source and executable codes, draft and final user documentation of all software provided under this contract. Delivery shall be made as required by the COR and/or with the Final Report (See Data Item N. A010) **DD250 required only for acceptance by the COR designated in Section G.2.				To be provided at time of award	
				15. TOTAL →	
1. DATA ITEM NO. A004	2. TITLE OF DATA ITEM Final Report			3. SUBTITLE	
4. AUTHORITY (Data Acquisition Document No.)		5. CONTRACT REFERENCE Section B, C and F		6. REQUIRING OFFICE COR(See section G.2)	
7. DD 250 REQ DD250	9. DIST STATEMENT REQUIRED	10. FREQUENCY One Time	12. DATE OF FIRST SUBMISSION EOC +90 days	14. DISTRIBUTION	
8. APP CODE		11. AS OF DATE EOC	13. DATE OF SUBSEQUENT SUBMISSION N/A	a. ADDRESSEE	b. COPIES Draft Final Reg Repr
16. REMARKS *The Contractor shall provide a Final Technical Report of accomplishments for the entire program within 90 days after contract completion. The report shall include documentation of the intelligent data assimilation scheme, documented and tested code to automatically produce a sea ice chart in an approved WMO format using ea ice classification algorithms for active and passive microwave, and visible and infrared satellite based sensors. Complete user's and programmer's guides. **NRL-SSC Code 7035.3L will provide the required number of copies to the Defense Technical Information Center (DTIC)				To be provided at time of award	
				15. TOTAL →	
G. PREPARED BY Naval Research Laboratory - SSC		H. DATE JUN 2001		I. APPROVED BY	
				J. DATE	

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